

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANTHONY IVERSON and RONALD L. MERCKLING

Appeal No. 98-2005
Application No. 08/571,156¹

ON BRIEF

Before COHEN, FRANKFORT, and STAAB, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 5, 8 through 13 and 16 through

¹ Application for patent filed December 12, 1995.

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20. Claims 6, 7, 14 and 15, the only other claims pending in the application, have been indicated by the examiner to contain allowable subject matter, but currently stand objected to until such time that they are rewritten in independent form including all the limitations of the base claim and any intervening claims.

Appellants' invention is directed to a motor and transmission assembly associated with a vehicle transfer case that allows the vehicle to be switched between two-wheel and four-wheel drive modes of operation, and to a method of operating such an actuator for a vehicle transfer case. More specifically, the invention involves a transmission for driving a vehicle transfer case actuator wherein a cushion (e.g., spring 40 of Fig. 2) is provided for a stop (42) which prevents movement of the transmission beyond desired ends of travel. Appellants' specification (pages 1-2) describes the state of the art at the time the invention was made. In the prior art it is indicated that

[i]n theory the worm gear should never approach the extremes of the stop. As one example, in the prior art system, only 270° of rotation is

necessary to actuate or move the actuator pin, while the motor transmission has 330° of range. A position feedback sensor monitors the position of the worm gear and should stop rotation at the extremes of the 270° range. However, in practice it does happen that the motor occasionally moves beyond the 270° range. In such circumstances, without a stop, the motor would extend up to 360° of rotation. The motors typically incorporated into the use systems allow full rotation, as a limited rotation motor is unduly expensive. For that reason, the prior art has typically included a stop to prevent rotation beyond a greater range (i.e. 330° of rotation). Thus, as the transmission approaches 330° of rotation, the stop will prevent further rotation. In the past, the stop often wedges into the housing structure and locks the gear motor. Once this happens, the system is no longer functional.

As noted above, appellants' solution to this problem is to provide a cushion in the form of spring (40), seen best in Figures 2 and 3 of the application, for damping the motion of the stop (42) as it approaches its end of travel at the stop surface (38) and before it hits the stop surface. This prevents the stop (42) from impacting against the stop surface (38) and becoming wedged into the housing so that the system becomes jammed or locked and is thus no longer functional.

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Claims 1, 9 and 19 are representative of the subject matter on appeal and a copy of those claims may be found in the "Claim Appendix" of appellants' brief.

The prior art references relied upon by the examiner as evidence of obviousness under 35 U.S.C. § 103 are:

Aoki et al. (Aoki)	4,805,472	Feb. 21, 1989
Watson et al. (Watson)	5,407,024	Apr. 18, 1995
		(filed June 24, 1992)
Buhl et al. (Buhl)	5,469,757	Nov. 28, 1995
		(§ 102(e) date August 27, 1994)

In addition to the foregoing references, the examiner has also relied upon Admitted Prior Art set forth on page 2, lines 1-8, of appellants' specification.

Claims 1 through 5, 8 through 13 and 16 through 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Admitted Prior Art in view of Buhl.

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Claims 1 through 5, 8 through 13 and 17 through 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Aoki in view of Buhl.

Claim 16 stands rejected under 35 U.S.C. § 103 as being unpatentable over Aoki in view of Buhl as applied to claim 9 above, and further in view of Watson.

Rather than reiterate each of the points of argument advocated by appellants, we make reference to pages 4-6 of the brief (Paper No. 10, filed July 14, 1997) and to the reply brief (Paper No. 13, filed January 13, 1998) for a full statement thereof. The examiner's comments regarding the above-noted rejections and in response to appellants' arguments may be found on pages 4-9 of the examiner's answer (Paper No. 12, mailed December 9, 1997).

OPINION

Having carefully considered appellants' specification and claims, the teachings of the applied references, the Admitted Prior Art, and the respective positions of appellants and the

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examiner, we have reached the determination that the respective rejections posited by the examiner will not be sustained. Our reasoning follows.

Appellants and the examiner appear to be in agreement that the Admitted Prior Art and Aoki each disclose or teach the claimed subject matter except for the cushion (claims 1 and 9) or spring cushion (claim 19) which cushions movement of the stop and second gear of a vehicle transmission transfer case actuator as said stop approaches a fail-safe stop surface at the ends of its range of travel. To supply this deficiency, the examiner has turned to the teachings of Buhl. Buhl discloses a windshield wiper drive wherein the wiper spindle (1) performs a rotational movement to-and-fro, thus reversing or inverting its sense of rotation repeatedly during operation each time after rotating through a selected wiping angle. Buhl notes (col. 1, lines 27-31) that the inversion should take place as smoothly as possible, that is,

without any remarkable jerk, because this does not only lead to annoying noises but in the long run also to detrimental influences on the driving mechanism as a whole.

Thus, Buhl seeks to provide an apparatus wherein a smooth or cushioned inversion of motion is achieved in either direction of movement of the wiper spindle. As noted in column 1, lines 39-67, Buhl attains this objective by developing an apparatus for limiting the wiper angle of the windshield wiper unit, that apparatus including a spring element that

is fixed to a housing, preferably to the cover of the gearing and is thus retained unrotatingly and unslidingly. An angled-off free end of a springy arm of the spring element borders each side of a gap between two teeth of a part-pinion which defines a toothless section. A springy arm involved at a particular moment is elastically deflected when a first or last tooth of the part-pinion comes to strike against the angled-off free end of the respective springy arm. The spring element is associated with the pinion gap in such a way that the striking of the tooth against the angled-off free end or stop member of the springy arm takes place shortly before an inversion of motion. Since an increasing bend of the springy arm brings about an increased rotational resistance, the final phase of the rotational movement of the part-pinion and wiper spindle will progressively be braked in both end

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directions of the movement to-and-fro. The spring resistance must be selected depending on the motor rating and on the other characteristics of the drive as a whole. Such resistance might be determined by tests. A Jerky inversion of motion with such adverse effects as, for example, the generation of noise, will be avoided with this apparatus.

It will be appreciated from the above that when the wiper spindle is in a middle position, the gap of the part-pinion, too, will assume a middle position. In respect to the latter, the pair of stop members are positioned symmetrically.

While the examiner urges that it would have been obvious to one having ordinary skill in the art to modify the transfer case transmission apparatus of the Admitted Prior Art, or Aoki, by using the spring element of Buhl et al. in order to ensure that the inversion of motion does not take place all of a sudden but in a cushioned manner, it is our opinion, after careful consideration of the collective teachings of the applied prior art, that there is no fair teaching, suggestion or motivation in the prior art relied upon by the examiner which would have led one of ordinary skill in the art to the particular combination as urged by the examiner. In this regard, we note that none of the references relied upon by the examiner provides a recognition of the problem to which the appellants have directed their inventive efforts. Both the Admitted Prior Art and Aoki are silent regarding any problem of the type identified by appellants (specification, page 2), and, as a result, are in no

way concerned with a cushion or cushioning spring of the type required in the claims on appeal.

Buhl, on the other hand, in contrast to appellants and the Admitted Prior Art or Aoki, is concerned with a distinctly different kind of problem in an entirely different type of apparatus, i.e., the smooth inversion of motion in a vehicle windshield wiper unit, wherein the wiper operation requires that the wiper be repetitively oscillated between end points that define the wiping angle. No such repetitive oscillation is present in the transmission apparatus of the Admitted Prior Art or Aoki, wherein the worm gear is driven in a single direction to shift the drive in a particular manner (e.g., into four-wheel drive) and then retained in that position until a shift to the other drive mode (i.e., two-wheel drive) is needed or desired. Thus, we perceive no reasonable basis for incorporating a spring device of the nature seen in Buhl into the transfer case actuator of the Admitted Prior Art or Aoki in order to ensure that the "inversion of motion does not take place all of a sudden but in a cushioned manner," as is urged by the examiner (answer, pages 5 and 7), since there is

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no repetitive inversion of motion of the type present in Buhl
in the transmission actuator systems of the Admitted Prior Art
and Aoki.

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In the final analysis, the only suggestion for the combination proposed by the examiner, in our opinion, comes from

hindsight based upon appellants' own disclosure. It is of course impermissible to rely on hindsight and to use the claimed invention as an instruction manual or template to piece together unrelated teachings of the prior art so as to arrive the claimed invention, as the examiner has done here.

See In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). Accordingly, we will not sustain the examiner's rejection of claims 1 through 5, 8 through 13 and 16 through 20 under

35 U.S.C. § 103 based on the Admitted Prior Art and Buhl, or that of claims 1 through 5, 8 through 13 and 17 through 20 under

35 U.S.C. § 103 based on Aoki and Buhl.

As for the examiner's rejection of dependent claim 16 under 35 U.S.C. § 103 as being unpatentable over Aoki, Buhl and Watson, we find nothing in Watson which makes up for or would have been suggestive of the deficiencies in the basic

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combination of Aoki and Buhl as noted above. Accordingly, we will likewise not sustain the rejection of claim 16 on appeal under 35 U.S.C.

§ 103.

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To summarize, the rejections posited by the examiner in the examiner's answer have not been sustained, and thus the decision of the examiner rejecting claims 1 through 5, 8 through 13 and 16 through 20 of the present application under 35 U.S.C. § 103 is reversed.

REVERSED

IRWIN CHARLES COHEN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CHARLES E. FRANKFORT)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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LAWRENCE J. STAAB)	
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REVERSED

Prepared: January 12, 2000